Vol. 109 No. 5 September 4, 1948

The American FERTILIZER

AMMONIUM NITRATE

SULPHATE of AMMONIA

ORGANIC AMMONIATES

SULPHUR

VEGETABLE OIL MEALS AND FEEDSTUFFS

Exclusive Distributors Duval Texas Sulphur

ASHCRAFT-WILKINSON CO.

Home Office
ATLANTA, GEORGIA

Branches
NORFOLK, VA.
CHARLESTON, S. C.
JACKSON, MISS.
TAMPA, FLA.

Cable Address
ASHCRAFT

Subsidiaries
INTERSTATE MILLS, INC.
CAIRO, ILL.
INTERSTATE WAREHOUSE
MOUNDS, ILL.

wait for lightning — and starve!

Lightning and rain together nourish the soil with nitrogen. But on this diet alone, the earth and its people would starve. So the farmer looks to other, more dependable sources. Even so, the net annual loss of nitrogen from the soil runs into millions of tons. More nitrogen is needed—quickly, economically, and in quantity. The richest, most economical source of this vital plant-food is ammonia.

CSC is producing anhydrous ammonia at its Dixie Plant at Sterlington, Louisiana. Working at full capacity, Commercial Solvents is supplying the major part of its output to Gulf Coast manufacturers for conversion into nitrogen-rich fertilizers.

CSC

AGRICULTURAL DIVISION, COMMERCIAL SOLVENTS CORPORATION, 17 EAST 42nd STREET, NEW YORK 17, N. Y.

Published every other Saturday. Annual subscription: in the United States, $3.00; Canada and Mexico, $4.00 other countries, $5.00. Entered as second-class matter, January 15, 1910, at the Post Office at Philadelphia, Pa., under Act of March 3, 1879. Registered in United States Patent Office. Publication office. 1900 Chestnut St., Phila. 3, Pa.

Ask the man on the tractor!

He'll tell you in unmistakable terms that he wants the lighter weight paper units that a man can handle comfortably, and that won't overflow the bin.

This lighter weight container is more *practical* and is easier to handle in the field. Manufacturers who pack their fertilizer in St. Regis multiwall paper bags are making themselves popular with the farmer. These strong multiwalls really do a job—cutting down unnecessary lifting, and delivering the fertilizer in first-class, free-flowing condition.

A St. Regis sales office near you will give you facts and figures on these low-cost bags and on the St. Regis packers that save many manual filling operations.

SALES SUBSIDIARY OF ST. REGIS PAPER COMPANY

ST. REGIS SALES CORPORATION

230 PARK AVENUE • NEW YORK 17, N. Y.

Offices in New York • Chicago • Baltimore • San Francisco and 20 other industrial centers—IN CANADA: ST. REGIS PAPER CO. (CAN.) LTD., MONTREAL • HAMILTON • VANCOUVER

ST. REGIS—WORLD'S LARGEST MANUFACTURER OF MULTIWALL PAPER BAGS

+ MULTIWALL =

BETTER PACKAGING AT LOWER COST

ST. REGIS PACKAGING SYSTEMS

A Complete Service

THE strategic factory locations of The American Agricultural Chemical Company, as shown on the accompanying map, assure prompt, dependable service for the complete line of products listed below.

We manufacture all grades of Commercial Fertilizers, Superphosphate, Agrinite Tankage, Bone Black, Bone Black Pigments (Cosmic Black), Bone Ash, Bone Oil, Dicalcium Phosphate, Monocalcium Phosphate, Gelatin, Agricultural Insecticides (including Pyrox, Arsenate of Lead, Calcium Arsenate, etc.), Trisodium and Disodium Phosphate, Phosphorus, Phosphoric Acid, Sulphuric Acid, Ammonium Carbonate, Ammonium Fluosilicate, Magnesium Fluosilicate, Potassium Fluosilicate, Phosphorus Pentasulphide, Phosphorus Sesquisulphide (lump), Zinc Fluosilicate, Salt Cake; and we are importers and/or dealers in Nitrate of Soda, Cyanamid, Potash Salts, Sulphate of Ammonia, Raw Bone Meal, Steamed Bone Meal, Sheep and Goat Manure, Fish and Blood. We mine and sell all grades of Florida Pebble Phosphate Rock.

FACTORIES

Alexandria, Va.
Baltimore, Md.
Buffalo, N. Y.
Carteret, N. J.
Cayce, S. C.
Chambly Canton, Quebec, Can.
Charleston, S. C
Cincinnati, Ohio
Cleveland, Ohio
Detroit, Mich.
Greensboro, N. C.
Havana, Cuba
Henderson, N. C.
Montgomery, Ala.
Nat. Stockyards, Ill.
Norfolk, Va.
No. Weymouth, Mass.
Pensacola, Fla.
Pierce, Fla.
Port Hope, Ont., Can.
Savannah, Ga.
Searsport, Maine
South Amboy, N. J.
Spartanburg, S. C.
Wilmington, N. C.

The AMERICAN AGRICULTURAL CHEMICAL Co.

50 Church Street, New York 7, N. Y.

SALES OFFICES

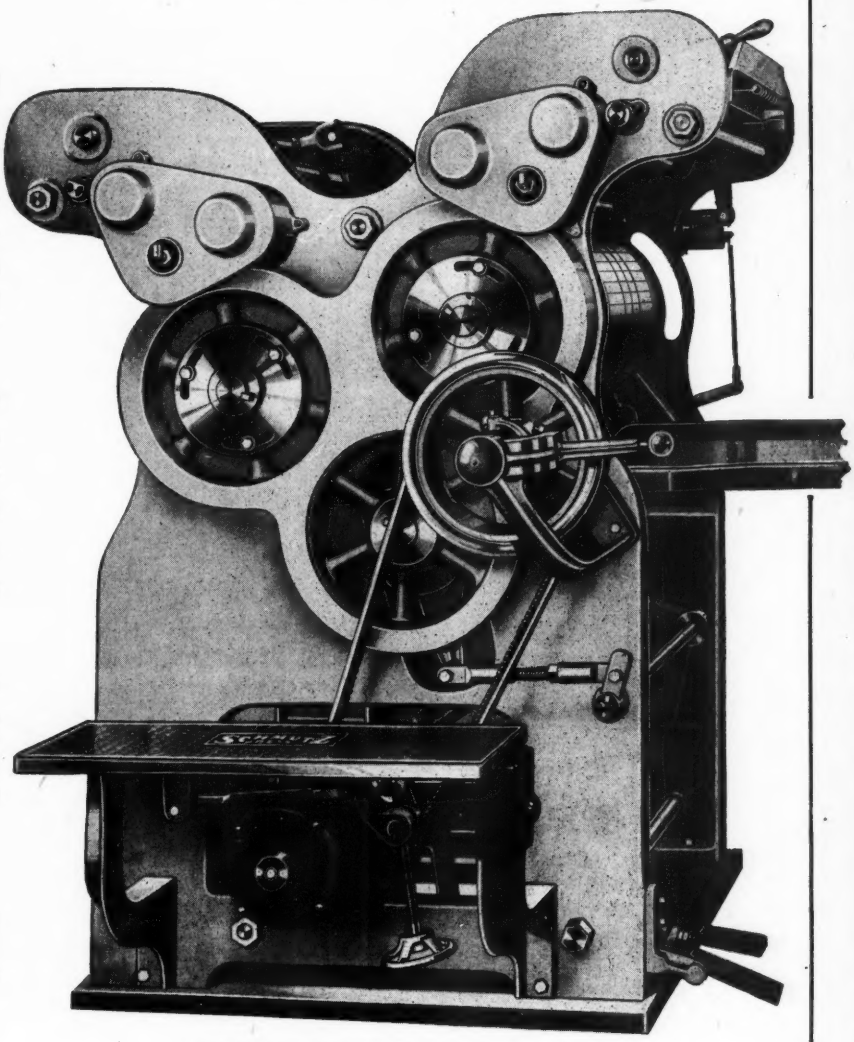
Alexandria, Va.
Baltimore, Md.
Buffalo, N. Y.
Carteret, N. J.
Charleston, S. C.
Cincinnati, Ohio
Cleveland, Ohio
Columbia, S. C.
Detroit, Mich.
Greensboro, N. C.
Havana, Cuba
Henderson, N. C.
Houlton, Me.
Laurel, Miss.
Montgomery, Ala.
Montreal, Quebec, Can.
National Stockyards, Ill.
New York, N. Y.
Norfolk, Va.
No. Weymouth, Mass.
Pensacola, Fla.
Pierce, Fla.
Port Hope, Ont., Can.
Savannah, Ga.
Spartanburg, S. C.
Wilmington, N. C.

print your FERTILIZER BAGS *more attractively*

This new Model Bag Printer will print any size or type of bag made of paper, burlap, cotton or paper-lined material. It is built in one, two and three colors.

The highest type of printing can be done with this machine at the lowest possible cost. It will also do an excellent job of printing on used bags.

We are in a position to make prompt delivery on printing plates also printing inks for the Fertilizer industry.



SCHMUTZ MFG. CO.
INCORPORATED
18th and Main Streets
Zone 3
Louisville, Ky.

MANUFACTURED IN TWO AND THREE COLORS

CABLE ADDRESS "SCHMUTZ" ◆ LONG DISTANCE PHONE JACKSON 5219

NOW
LION
Nitrogen
SOLUTIONS

HELP YOU INCREASE THE NITROGEN CONTENT OF YOUR MIXED FERTILIZERS

and

Lower your Costs

You get these
EXTRAS

EXTRA QUALITY
EXTRA NITROGEN
EXTRA PROFITS

Lion Nitrogen Solutions give you the means of using maximum amounts of both ammonia nitrogen and nitrate nitrogen in your mixed fertilizers. Lion Nitrogen Solutions give you more nitrogen per dollar. Properly used, they produce fertilizers that cure rapidly, store well and drill efficiently. That means extra profit for you because Lion Nitrogen Solutions supply in one operation the nitrogen that is usually added separately by several nitrogen carriers.

Write to Lion Oil Company, Chemical Division, El Dorado, Arkansas for complete details today.

LION NITROGEN SOLUTIONS—COMPOSITION

LION SOLUTIONS	AMMONIUM NITRATE %	ANHYDROUS AMMONIA %	WATER %	NITROGEN CONTENT (%)		
				NITRATE %	AMMONIA %	TOTAL
NITROGEN SOLUTION...1	65.0	21.7	13.3	11.38	29.22	40.6
NITROGEN SOLUTION...2	55.5	26.0	18.5	9.71	31.10	40.8
NITROGEN SOLUTION...3	66.8	16.6	16.6	11.69	25.34	37.0

Chemical Division
LION OIL COMPANY
EL DORADO, ARKANSAS

LION

The American FERTILIZER

Vol. 109 SEPTEMBER 4, 1948 No. 5

Applying Fertilizer through Irrigation Water*

By F. W. PEIKERT and R. L. COOK

Sections of Agricultural Engineering and Soil Science, Michigan Agricultural Experiment Station

NITROGEN may well be applied through irrigation water. Most of the nitrogen fertilizers are readily soluble, and the chemistry of nitrogen in the soil is such that the idea of broadcasting the fertilizer in solution is theoretically sound. Potash fertilizers may also be applied satisfactorily through irrigation water, but it is probably desirable to apply only a small portion of the total quantity in this manner and the remainder in bands at planting time. Phosphorus is not adapted to application in water and, therefore, it follows that mixed commercial fertilizers containing phosphorus should not be applied in this manner.

It is the object of this article to show why the fertilizer nutrients vary in their adaptability to applications through irrigation water and discuss rates and methods of applications.

The three major plant nutrients, nitrogen, phosphorus and potassium, vary in the way they lend themselves to application through irrigation water. The variation is largely due to differences in chemical activity in the soil and to degree of solubility of the fertilizer materials. A brief discussion of the individual nutrients, as to how they exist in the soil and in the fertilizer bag, and what happens to them in the soil shows why they are not equally adapted to this manner of application.

*Reprinted from Michigan Agricultural Experiment Station Quarterly Bulletin, May 1948.

[1] Soil Science Society of America Proceedings 11: 298–304, 1946.

Nitrogen Well Adapted to Application Through Irrigation Water

Most of the nitrogen exists in the soil in the form of organic matter. Soil microorganisms decompose the organic matter and release the nitrogen as ammonia. Other organisms change the ammonia to nitrate nitrogen, the form in which most plants prefer their nitrogen. If the form of organic matter in the soil is highly carbonaceous in nature, as straw or corn stover, the quantity of nitrogen contained is too low for the body needs of the organisms which bring about the decomposition. At such a time the organisms collect all that is available in the soil. This includes the nitrogen which was applied as fertilizer at the time the crop was planted. Thus, nitrogen applied at planting time may be entirely used up by soil organisms before the time comes when the crop actually needs it.

This was shown to be true in greenhouse experiments in which a per acre application of 900 pounds of ammonium nitrate at planting time did not furnish sufficient nitrogen to nourish sugar beets until harvest. The starvation was indicated by tests made on the green tissue. In comparison, plants which had received the same quantity of nitrogen fertilizer in three applications, one at planting time and two later, were well supplied with nitrogen throughout the season. From the weight of the crop produced and the analysis of the beets, only 50 per cent of the nitrogen could be accounted for where it was all applied early, while in the other case it was possible

to account for about 70 per cent of the quantity applied and the tests indicated some still available to the crop at harvest time. There seems little doubt but what most of the nitrogen not accounted for was used up by soil organisms as there was no leaching from the pots.

Some of the state experiment stations have reported good response from nitrogen fertilizer applied as a side-dressing when corn was 2 to 3 feet high but very little response when the fertilizer was applied at planting time or before. It is very likely that the nitrogen which was applied early in the season was either lost through leaching or was used by soil organisms before the corn had made sufficient growth to require the supplementary application.

Carolus[2] has reported that potatoes, at the Virginia Truck Experiment Station, required only 7 pounds of nitrogen an acre during the first 7 weeks of their growth period but during the next 5 weeks the crop used 53 pounds an acre. The logical time then to apply nitrogen for such a crop is during that period of rapid growth when the need for nitrogen is great. Irrigation water, of course, offers a convenient means of making such applications during midseason.

Without irrigation, midseason applications of soluble nitrogen fertilizer may be ineffective because the surface soil does not contain enough moisture to dissolve the nitrogen salt. Deep placement at that season is not recommended, because of the danger of injury to roots. Irrigation water therefore furnishes a good solution to this otherwise difficult problem.

Only soluble salts can be easily and efficiently applied through irrigation water. All of the three common nitrogen salts, ammonium sulfate, ammonium nitrate, and sodium nitrate are easily and completely soluble in water.

Dates as well as rates of application of nitrogen salts through irrigation water should vary with different soils and with crops. Perhaps one should always apply a small quantity of nitrogen at planting time, just in case rainfall is plentiful for a time and no irrigation is needed. Tests made on the soil and on the green plants along through the season should furnish worthwhile clues as to when nitrogen should be first placed in the irrigation water. With most crops it will be several weeks after planting, when vegetative growth becomes rapid. Forty to eighty pounds of nitrogen applied per acre during the rapid growth period should be sufficient for most crops. The smaller quantity would be contained in approximately 200 pounds of ammonium sulphate, 120 pounds of ammonium nitrate, or 240 pounds of sodium nitrate. If it is contemplated that the rapid growth period of the crop will last 6 weeks it is recommended that one-sixth of the total quantity of nitrogen be applied each week.

[2] American Potato Journal 14: 141–153, 1937.

Potash at Planting Time and Through Irrigation Water

Potassium salts are largely soluble in water and the element does not readily form unavailable compounds in the soil, so it is easy and theoretically correct to apply potash fertilizer through irrigation water if desirable. However, there is probably little reason to recommend the method of application for this fertilizer except when *additional* applications are needed. Potassium does not leach readily and it is not used in large amounts by soil organisms, as is the case with nitrogen. Therefore, it is correct to apply all the potash at the time of planting or before. However; one may not be able to predict exactly the needs of a crop, so perhaps when irrigation is to be practiced it will be most economical to apply a medium quantity at planting time and more through irrigation water as tests indicate a need. The tests should be made regularly on the green plants.

As an illustration, if the planting time application of fertilizer is 1,000 pounds per acre of 2–16–8, about 130 pounds of 62-per cent muriate of potash will be required to contain the same quantity of potassium. If, after the initial planting time application, there is need for more in the irrigation water an application of 22 pounds each week for 6 weeks would result in a doubling of the initial application.

Phosphorus Should Be Applied at Planting Time

Experiments conducted during recent years have shown that fertilizers containing phosphorus are much more efficient when applied in bands than when mixed with the soil after a broadcast application. The greater efficiency is largely due to the lesser contact between the fertilizer and the soil, which results in less fixation of the phosphorus into forms not available to plants. Application of phosphorus in solution would result in maximum contact between the phosphorus and the soil and, therefore, fixation of much of the phosphorus into very difficultly available forms.

Another reason why phosphorus cannot be applied efficiently through irrigation water is

(Continued on page 28)

Suggested Permanent Soil and Water-Use Program and the Probable Role of Fertilizers in it*

By DR. J. T. SANDERS, *Legislative Counsel, The National Grange*

(Continued from the issue of August 21, 1948)

A permanent water and soil conservation program and an enormously expanded role for fertilizer, therefore, are both highly essential in our current world-wide effort to insure a greater abundance and stability to man's food supplies and an expansion of these supplies to meet prospective population increases. These might be looked upon as the twin basic factors, as the main elements of future expansion of food production. When these are supplemented with the striking improvements such as use of 2–4–D, for killing weeds in pasture and grain fields, thus insuring more complete utilization of fertilizer by economic plant life, we need not be surprised if the current century finds also a postponement of both the necessity of checks and a postponement of the undesirableness of the growth of population, both of which looked so imminent and uninviting to Malthus. They need not be an uninviting prospect to us today

A Suggested Program

Since moisture availability will play such a vital role in expanded food production and in future use of fertilizer, may I, therefore, at this juncture, briefly sketch for you what I believe are the essentials of a sound or permanent soil and water conservation program? In general, a sound soil program demands that soil fertility be maintained and that the soil be used and kept in its original situs as much as possible. A sound water program demands that maximum economic use of water be made first in the soil on which it falls; that maximum economic use of necessary run-off water be made at lower levels on the watershed; that any necessary run-off be accomplished with minimum damage to the stability of the soil and to property and life on lower levels of the drainage basin.

These over-simplified principles governing a sound land and water program call for unified planning and development of the uses of both land and water resources on all of our major watersheds as integral units. There are possibly some 15 to 25 such integral watershed problem areas in the nation. When such a large major watershed as, for example, the Missouri Valley, is integrated into a coordinated plan of development, the separate jobs such as soil and water conservation on the hundreds of thousands of farms, the problem of use of water from many reservoirs for irrigation, industrial use, and flood control, and the reduction of flood and siltation damage to a minimum, all add up to one of the most complex of man's problems. Such a complex problem, to yield maximum returns per dollar of cost, requires effective separate unified planning and development of each of these 15 to 25 major watershed areas.

May I parenthetically say that all public works problems such as we are here discussing, should be tested by an iron-bound requirement that benefits must exceed costs—total life of the project considered with benefits and costs properly discounted for time. If we tested all public expenditures by a true cost-benefit test, graft and log-rolling in public expenditures could and would thereby be reduced to a minimum; and private industry would have far less reason for just complaint of unfair competition of government intrusion in legitimate fields for private industry. It would be a most desirable thing to have such industrial groups as yours get behind a move to insist on a requirement of rigid cost-benefit tests applied to all pulbic works. If works to develop our resources cannot stand such a test, just as each of us would apply to a construction job in private industry, such public works should be classed as unprofitable and no appropriation should be made for them. Please do not misinterpret this statement—the total life, and service of a project for promoting the national welfare, must be carefully and fully evaluated and balanced against total costs, with proper

(Continued on page 24)

THE AMERICAN FERTILIZER

ESTABLISHED 1894

PUBLISHED EVERY OTHER SATURDAY BY
WARE BROS. COMPANY
1900 CHESTNUT ST., PHILADELPHIA 3, PA.

A Magazine international in scope and circulation devoted exclusively to the Commercial Fertilizer Industry and its Allied Industries

PIONEER JOURNAL OF THE FERTILIZER INDUSTRY

A. A. WARE, Editor
K. F. WARE, Advertising Manager

ANNUAL SUBSCRIPTION RATES

U. S. and its possessions, also Cuba and Panama	$3.00
Canada and Mexico	4.00
Other Foreign Countries	5.00
Single Copy	.25
Back Numbers	.50

THE AMERICAN FERTILIZER is not necessarily in accord with opinions expressed in contributed articles that appear in its columns. Copyright, 1948, by Ware Bros. Company.

Vol. 109 SEPTEMBER 4, 1948 No. 5

Principal Articles in This Issue

APPLYING FERTILIZER THROUGH IRRIGATION WATER, *by F. W. Peikert and R. L. Cook* 7
SUGGESTED PERMANENT SOIL AND WATER-USE PROGRAM AND THE PROBABLE ROLE OF FERTILIZERS IN IT (concluded), *by J. T. Sanders* 9
California Fertilizer Association to Celebrate Silver Anniversary 10
Phosphate Rock in 1947 11
July Sulphate of Ammonia 11
Fertilizer Production in India to Start by 1950 12
Texas Fertilizer Sales Increase 12
Nitrogen Export Quotas 12
FERTILIZER MATERIALS MARKET
New York 13
Charleston 14
Chicago 16
Philadelphia 16
Davison Reports Profitable Year 18
OBITUARIES
W. H. Gordon 18
W. A. Huey 18
International Reports Increased Sales and Earnings 20

California Fertilizer Association to Celebrate Silver Anniversary

The 25th annual convention of the California Fertilizer Association will be held at the Mission Inn, Riverside, California on October 18th and 19th.

As a preliminary to the general sessions of the convention, there will be a meeting of the Soil Improvement Committee the afternoon of October 17. This will be followed by an aquatic show to be put on by the Inn at its beautiful new outdoor swimming pool.

The program of the general session on October 18 will be in charge of Allen B. Lemmon, State chemist of California. Speakers will include: Dr. W. E. Martin, California soils extension specialist; Dr. E. F. Wallihan, Citrus Experiment Station; Dr. Ocsar A. Lorenz, truck crop specialist, Davis, California.

Recreation activities in the afternoon will feature contests in golf, bowling, swimming and bridge. In the late afternoon there will be a cocktail party, which will be followed by the 25th anniversary dinner at which several old timers of the Association will be honored and the contest prizes will be awarded.

The Association's program will be given on the 19th. After an address of welcome by Dr. L. D. Batchelor, director, Citrus Experiment Station, there will be addresses by: Dr. Wallace Macfarlane, Pacific Guano Company; Mr. C. B. Moore, secretary, Western Growers Association, Los Angeles; Mr. Francis R. Wilcox, asistant general manager, California Fruit Growers Exchange, Los Angeles; Dr. Hans Jenny, head of soils division, University of California.

In the afternoon, there will be speeches by: Dr. A. D. Shamel, retired from the Citrus Experiment Station; Mr. C. T. Prindeville, Swift & Company, Plant Food Division, Chicago; Mr. M. E. McCollam, American Potash Institute; Dr. George D. Scarseth, director of research, American Farm Research Association; Dr. Oliver E. Overseth, executive secretary and manager, California Fertilizer Association.

An executive session of the Association will be held in the late afternoon. In the evening there will be a cocktail party and the annual dinner dance.

Provision has been made for a visit (optional) on the morning of October 20 to the Kaiser Steel Plant to give an opportunity to see the production of byproduct ammonium sulphate.

Phosphate Rock in 1947

Startling new high records were made in the domestic phosphate rock industry in 1947 according to reports submitted by the producers to the Bureau of Mines, United States Department of the Interior. Total mined production jumped nearly two million tons, from 7,168,839 long tons in 1946 to 9,121,081 tons in 1947. Of this 6,381,282 tons were mined in Florida, an increase of over a million tons; 1,489,980 tons in Tennessee; and 1,249,819 tons in the Western States, more than double the mined production of 1946.

Sales were correspondingly high. The total phosphate rock sold or used by producers in 1947 also attained a new peak of 9,087,199 long tons valued at $47,461,981, an increase of over $16,000,000 more than the 1946 total. The marketed production from Florida, Tennessee and the Western States exceeded the 1946 figures in each area. The P_2O_5 content of the domestic phosphate rock sold or used in 1947 reached a new high—2,921,137 long tons.

Imports declined both in quantity and value. Exports increased by nearly a million tons, and more phosphate rock was exported from the Western States than from Florida. Apparent domestic consumption rose from 6,221,525 tons in 1946 to 7,445,948 tons in 1947. Stocks declined to 1,039,000 tons at the end of 1947.

PHOSPHATE ROCK PRODUCTION
(Long Tons)

	1947	1946
Florida		
Land pebble	6,314,077	4,807,563
Hard rock	79,330	100,881
Soft rock	88,620	97,067
Tennessee	1,411,884	1,362,600
Idaho	905,214	312,658
Montana	236,229	179,944
Wyoming	51,845	....
United States	9,087,199	6,860,713

"Farm Soils: Their Management and Fertilization"

The fourth edition of *Farm Soils: Their Management and Fertilization* by Edmund L. Worthen, Professor Emeritus of Soil Technology at Cornell University, has been published by John Wiley & Sons, 440 Fourth Ave., New York. This volume contains 510 pages and is priced at $3.20.

This book is a practical text telling the reader how and when to manage farm soils to get the best results. In simple and direct language, the author has described the most recent advances and methods involved in the science of soils. Included among the topics the book covers are explanations of fertilizing, liming, manuring, draining, irrigating, and tilling the soil; methods of soil conservation; complete instructions for managing the soils of vegetable and flower gardens, lawns, and orchards; and new material on soil erosion and control. The first edition of *Farm Soils* was published in 1927.

Professor Worthen, a fellow of the American Society of Agronomy, has had 34 years of experience in teaching, research, and extension work in soil management and crop production. Prior to joining the Cornell faculty in 1919, he was with the U. S. Department of Agriculture as a soil scientist and with the University of Illinois as a soil surveyor.

V-C to Move to New Office Building

The administrative offices of the Virginia-Carolina Chemical Corporation in Richmond, Va., will be moved on September 13th to the new building which the Company has constructed at 401 East Main Street a few blocks away from their present quarters. The new building will be formally opened on October 15th at which time the officers will be hosts at a reception to the many friends of this pioneer member of the fertilizer industry.

July Sulphate of Ammonia

There was practically no change in the production of by-product sulphate of ammonia during July from that of the previous month, according to the figures of the U. S. Bureau of Mines. The output totaled 70,272 tons, an increase of about 1,000 tons. In addition, 2,807 tons were manufactured from purchased synthetic ammonia. Shipments during July of 62,887 were 3,000 tons less than June and were 10 per cent less than production. Consequently stocks on hand at the end of the month had increased to 32,885 tons.

	Sulphate of Ammonia Tons	Ammonia Liquor Tons NH_3
Production		
July, 1948	70,272	2,107
June, 1948	69,269	2,073
July, 1947	65,127	2,192
January-July, 1948	472,943	14,217
January-July, 1947	455,619	15,073
Shipments		
July, 1948	62,887	1,511
June, 1948	65,873	1,510
July, 1947	61,539	2,096
Stocks on Hand		
July 31, 1948	32,885	497
June 30, 1948	25,916	586
July 31, 1947	26,229	583

Fertilizer Production in India to Start by 1950

The work on the fertilizer project at Sindri (Bihar), India, one of the greatest factories yet planned in Asia, has greatly progressed since the beginning of the year and production is expected to start in 1950.

The factory, which is estimated to cost $51,000,000, will have an annual rated capacity of 350,000 tons of ammonium sulphate. Gypsum and coke are the two principal raw materials for the manufacture of fertilizers and both are available in India.

The Chemical Construction Corporation are in charge of the designing of the factory, while the Power Gas Corporation of the United Kingdom are procuring the plant and erecting it.

The factory is being constructed with an installed capacity of 80,000 K. W., with room for expansion up to 200,000 K. W. if need be. The power house, one of the largest and the most modern in the East, is in an advanced stage of construction.

Texas Fertilizer Sales Increase

Sales of fertilizers in Texas during the first half of 1948 increased 10 per cent over the same half of 1947, according to figures reported by J. F. Fudge, State Chemist. The total tonnage reported was 277,183, compared with 252,311 tons during January-June, 1947. The increase in the use of higher analysis mixtures and materials is indicated that the present year's output contained a fifth more nitrogen and potash and over a third more phosphoric acid.

Of the total sales, two-thirds (183,471 tons) were of mixed goods, and one-third (89,261 tons) were individual materials. As in 1947, two grades accounted for almost 90 per cent of the mixed fertilizers: 4–12–4, 85,507 tons; 5–10–5, 79,137 tons. Sales of materials were made up principally of 20 per cent superphosphate (59,745 tons), ammonium phosphate sulphate, 16–20–0 (16,472 tons), and ammonium nitrate (6,399 tons).

Nitrogen Export Quotas

Country export ceiling quotas for various types of nitrogenous fertilizers to be licensed for export during the fiscal year ending June 30, 1949, were announced today by the Department of Commerce through its Office of International Trade.

The new over-all quota in terms of nitrogen content amounts to 60,185 tons, which is about the same as the total quota authorized for export in fiscal year 1948. Considerable changes have been made, however, with respect to the types of fertilizer material allocated to various countries.

The total quota of nitrogenous fertilizer to be exported by all supplying countries to all consuming countries is recommended by the International Emergency Food Committee of the Food and Agriculture Organization, which also proposes the individual quotas of the importing countries in terms of nitrogen content. The amount of each fertilizer material which may be shipped to specific countries by the United States is then set by OIT with the approval of the interagency Advisory Committee on Requirements.

The materials allotted include sulphate of ammonia (29,771 tons N); ammonium nitrate (24,314 tons N); ammonium phosphate (3,200 tons N); Nitrogen solutions (2,150 tons N); mixed fertilizers (750 tons N).

The allocations by countries in tons of nitrogen are: China, 17,471 tons; France, 12,015 tons; Netherlands, 10,050 tons; India, 4,409 tons; Cuba, 4,300 tons; Greece, 3,850 tons; Philippines, 3,417 tons; Latin America (outside of Cuba), 3,416 tons; Netherlands East Indies, 1,249 tons.

FERTILIZER MATERIALS

FAST DEPENDABLE BROKERAGE SERVICE

Your Inquiries Solicited

FRANK R. JACKLE

405 LEXINGTON AVENUE NEW YORK 17, N. Y.

FERTILIZER MATERIALS MARKET

NEW YORK

Shortage of Nitrogen Materials Curtails Production at Some Mixing Plants. Supplies of Superphosphate Accumulating. Organics Market Quiet with Prospects of Competition from Increased Supplies of Corn and Vegetable Meals. Potash Shipments Maintain Schedule

Exclusive Correspondence to "The American Fertilizer"

NEW YORK, September 2, 1948.

While many mixing plants are closed down for overhaul, those in operation are having difficulty maintaining production because of insufficient supplies of nitrogen. In some cases, supplies of superphosphate have accumulated to such an extent that further shipments have been deferred until storage space is available.

Sulphate of Ammonia

The supply of coke oven by-product sulphate of ammonia still continues inadequate in spite of additional production from purchased synthetic ammonia. The recent hot spell lowered steel output, which was reflected in lower coke production. Contract price remained firm at $45.00 per ton in bulk, f.o.b. producing plants.

Nitrate of Soda

Supplies of nitrate of soda at warehouse points are, in general, adequate for spot requirements. Producers and importers are not making contracts for future deliveries at the present time.

Ammonium Nitrate and Solutions

The demand far exceeds the supply in spite of increased production in some plants. Shipments of Canadian ammonium nitrate are running behind schedule.

Organics

The prospects of record supplies of corn and vegetable oil meals has caused a slackening of interest in packing-house ammoniates. Offerings of takage and dried blood have been limited and prices have tended to maintain their former levels. Tankage is quoted at $6.75 per unit of ammonia ($8.20 per unit N) in New York, and at $7.00 ($8.51 per unit N) in Chicago. Dried blood is offered at 25 cents per unit of ammonia (30 cents per unit N) higher than tankage at both the above centers.

Fish Meal and Scraps

No additional supplies of fish scrap and meal have come on the market. The season's catch has not been outstanding and producers prefer to hold present stocks for later delivery. Fish meal (60 per cent protein) is selling for $120.00 per ton on the Baltimore market, and scrap is priced at $110.00 per ton.

Castor Pomace

No additional supplies are reported and shipments are confined to present contracts. Most contracts are at $27.50 per ton in bags, f.o.b. works.

Bone Meal

Fewer offerings on the market are reported and the price situation remains firm, in spite of lessened buyer interest. Raw bone meal (4½ and 50 grade) is quoted at $65.00 per ton in the east and $60.00 per ton in Chicago. Steamed bone (3 and 50 grade) is priced at $60.00 per ton.

Hoof Meal

Hoof meal supply is small and production is below normal. Chicago quotations continue at $6.50 per unit of ammonia ($7.90 per unit N).

Phosphate Rock

The demand for rock continues at such levels that producers are still unable to accumulate any sizeable reserve supply of prepared rock. Export inquiries continues strong and take up any tonnage not needed to fill domestic requirements. Producing costs remain high.

Superphosphate

There has been some slackening of demand for superphosphate, due to lack of storage space at mixing plants. Some mixers cannot maintain production because of shortage of nitrogen and are using this period for overhaul in preparation for the coming fall and

winter season. Demand for concentrated superphosphate is still as strong as ever and no additional supplies are available.

Potash

The potash situation is satisfactory so far as shipments on current contracts are concerned. An adequate supply of box cars is reported and all production is being shipped to maintain schedules. Practically every mixer would like to increase his allotment but the producing companies have had to turn a deaf ear to their entreaties.

CHARLESTON

Superphosphate the Only Material in Adequate Supply. Chilean Nitrate Price Advances. Organics Market Quieter

Exclusive Correspondence to "The American Fertilizer"

CHARLESTON, August 31, 1948.

Nitrogen and potash continue short of demand with superphosphate in easier position than in the past few years. It is reported that current use of fertilizers now is 2½ times prewar use, with demand still strong for the coming season.

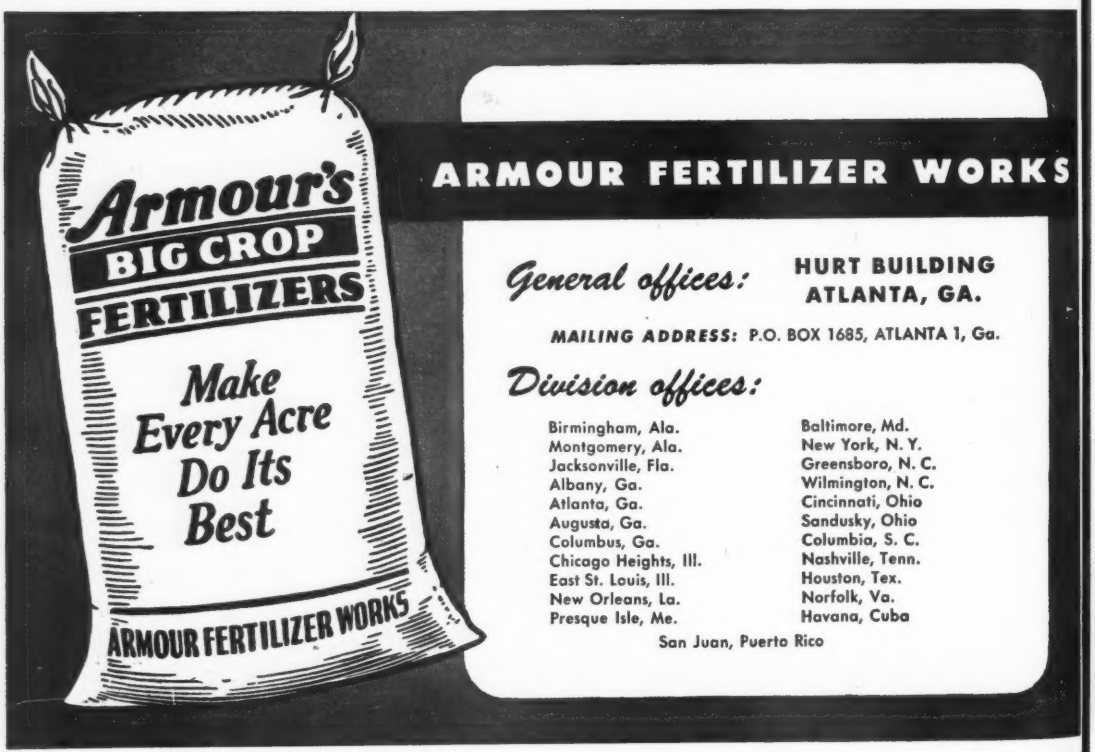
Organics.—Interest in organics is quiet, with most buyers apparently fairly well covered for their expected requirements. One producer of domestic nitrogenous recently increased contract price from $3.25 to $3.50 per unit of ammonia. Other nitrogenous producers continue to offer at $3.50 to $4.00 per unit of Ammonia ($4.25 to $4.86 per unit N), f.o.b. works. South American organics continue at prices higher than domestic sources.

Castor Pomace.—Some castor pomace has sold recently at $30.00 per ton in bags, f.o.b. eastern production point for fall shipment. Few offerings are in the market.

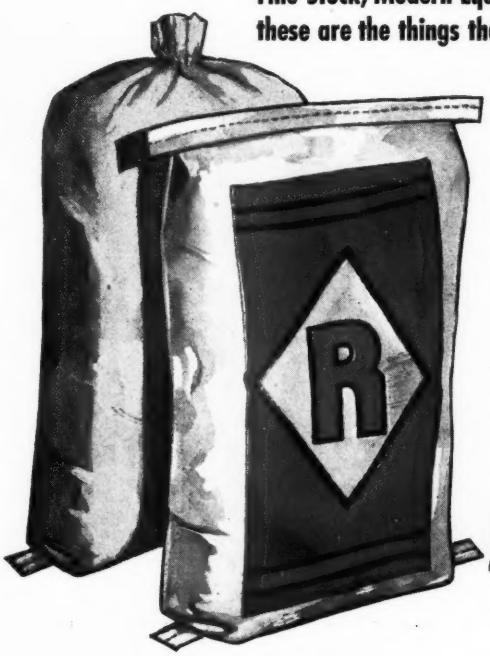
Dried Ground Blood.—The New York market is nominally $7.00 to $7.25 ($8.51 to $8.82 per unit N) and the Chicago market is around $7.00 per unit of ammonia ($8.51 per unit N) in bulk.

Fish Scrap and Fish Meal.—Demand from the feed trade is light but prices are firm at $120.00 per ton for 60 per cent menhaden meal and $125.00 for 65 per cent protein in the Baltimore area. West Coast protein meal is at $130.00 per ton for 65 per cent material, f.o.b. Los Angeles.

Nitrate of Soda.—Chilean nitrate of soda has been advanced $3.50 per ton to $48.00 in



Fine Stock, Modern Equipment, and good Commercial Fertilizers, these are the things that make a modern Farm profitable



Today's farmers buy the best. If you produce a Quality fertilizer you should pack it in a Quality Raymond Multi-Wall Paper Shipping Sack. These tough, strong, dependable Shipping Sacks are CUSTOM BUILT in various types, strengths, and sizes, printed or plain, to meet the special requirements of the fertilizer producer, packer, and shipper. Investigate Raymond Shipping Sacks today—let Raymond solve your packing and shipping problems.

THE RAYMOND BAG COMPANY
MIDDLETOWN, OHIO

RAYMOND
MULTI-WALL PAPER SHIPPING SACKS

bulk and $51.50 in 100 pound paper bags, in carlot shipments. There has been no change reported in the domestic nitrate of soda price. Contracts for fall shipment nitrate of soda are not yet being made until supply situation can become more clarified.

Potash.—Supply continues to exceed demand and it is reported that production and use of potash now is 260 per cent of the five-year prewar average. It is estimated that, compared with the season 1946–47, 16 per cent more potash has been produced in 1947–48. No change in prices has been noted.

Phosphate Rock.—Steady demand from domestic and export users continues to tax domestic production, keeping stocks above the ground at low levels.

Superphosphate.—Practically no shortages of superphosphate are reported and most buyers are in comfortable position regarding supply.

Sulphate of Ammonia.—No easement is indicated in the tight supply situation. Demand continues far in excess of expected supply.

Ammonium Nitrate.—Demand continues far in excess of supply and the market is tight.

Bone Meal.—Demand is spotty, but recent sales have been made at $60.00 per ton, f.o.b. Chicago in bags for 4½ and 45 grade raw bone meal.

CHICAGO

Buying Interest Slack but Low Production Keeps Prices Steady

Exclusive Correspondence to "The American Fertilizer"

CHICAGO, August 31, 1948.

Owing to the absence of aggressive buying interest in animal ammoniates in the middle-west, the market remains practically unchanged. Trading, however, is at a minimum but fortunately the volume of production has been low both in the packing house and rendering plants.

Dried blood and unground wet rendered tankage are both quoted nominally steady at $7.00 per unit of ammonia ($8.51 per unit N). Dry rendered tankage is just about holding its own at $1.50 per unit of protein. Meat scraps are selling at $87.50 to $92.00 per ton depending upon location and digester tankage at $95.00 to $105.00 per ton. Steam bone meal 65 per cent B.P.L. is quoted at $65.00 per ton and raw bone meal approximately $5.00 per ton lower.

PHILADELPHIA

Chemical Nitrogen Still Scarce. Organics Easier but Still Priced Above Fertilizer Levels. Superphosphate Supplies Adequate

Exclusive Correspondence to "The American Fertilizer"

PHILADELPHIA, August 31, 1948.

Chemical nitrogen continues to be in scarce supply, although quite a few of the smaller mixers do not seem to realize this fact. Organics are easier, due to slack demand from the feed mixers, but prices are still rather high for fertilizer use. Exports of fertilizer materials are reported under last year.

Sulphate of Ammonia.—There is no improvement in the supply situation and any resale material available finds ready outlet at premium prices.

Nitrate of Soda.—Stocks are limited, with demand greater than the supply. Chilean shipments are reported on a spot requirement basis, with contracts expected to be made later on in the year. Buyers are hoping they will be able to increase their 1947–48 quantities.

Ammonium Nitrate.—There is quite active demand at premium prices, but no offerings reported.

Castor Pomace.—Production is said to be entirely under contract.

Blood, Tankage, Bone.—Blood and tankage are in not too plentiful supply, which tends to offset the slackened demand. Sales of blood are reported at $7.00 per unit of ammonia

ESTABLISHED 1873

Woodward & Dickerson Inc.

FERTILIZER AND FEED MATERIALS

BROKERS
COMMISSION MERCHANTS

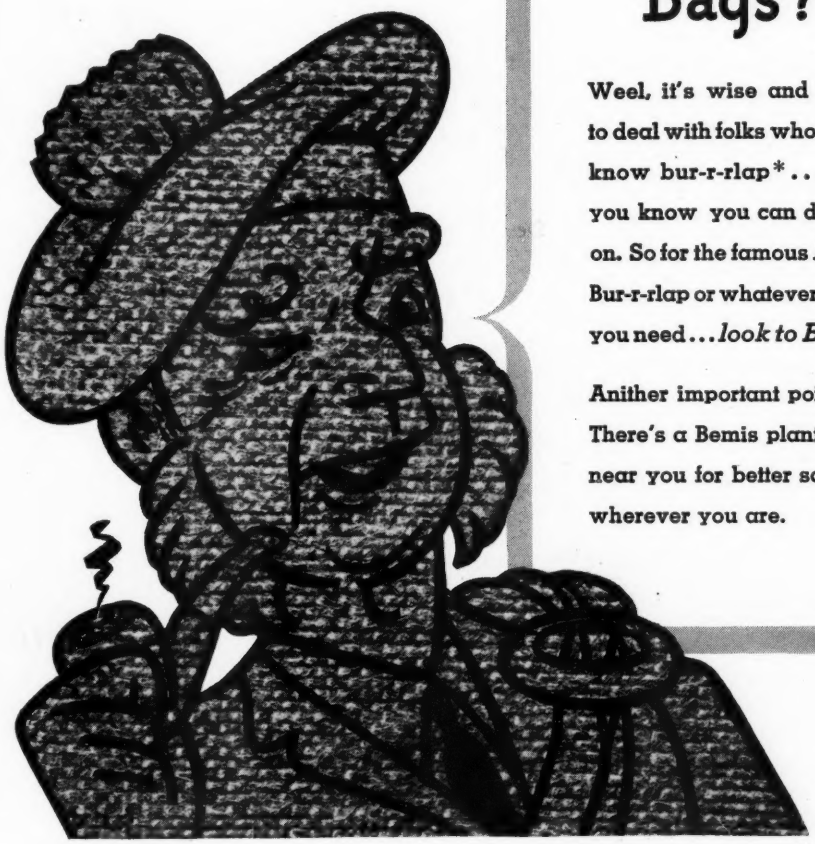
IMPORTERS
EXPORTERS

GIRARD TRUST BUILDING

PHILADELPHIA 2, PA., U. S. A.

Cable Address: "WOODWARD"

Codes used: Acme, Benlley's Complete, Appendix, Private



BUYING

Bur-r-rlap Bags?

Weel, it's wise and thrifty to deal with folks who really know bur-r-rlap* . . . folks you know you can depend on. So for the famous Angus Bur-r-rlap or whatever grade you need . . . *look to Bemis!*

Anither important point . . . There's a Bemis plant verra near you for better sairvice wherever you are.

* Each year Bemis determines the grading of burlap produced by the Indian jute mills. Bemis' grading is accepted by producers and users alike as the standard for burlap quality. This acceptance as the "supreme court" of the industry comes from Bemis' long and unequalled experience as importer, converter and distributor of burlap.

BEMIS

BEMIS BRO BAG COMPANY

"America's No. 1 Bag Maker"

Baltimore • Boise • Boston • Brooklyn • Buffalo • Charlotte • Chicago
Cleveland • Denver • Detroit • Houston • Indianapolis • Jacksonville, Fla.
Kansas City • Los Angeles • Louisville • Minneapolis • New York City
Memphis • Norfolk • New Orleans • Oklahoma City • Omaha • Phoenix
Pittsburgh • St. Louis • Salina • Salt Lake City • Seattle • Wichita
San Francisco

($8.51 per unit N) in New York, and $7.50 ($9.12 per unit N) in Chicago area. Tankage quoted at $6.75 per unit of ammonia ($8.20 per unit N) in New York, and $7.25 in Chicago. Hoof meal is offered at $7.00, ($8.51 per unit N) with $6.50 ($7.90 per unit N) bid.

Fish Scrap.—Demand has relaxed, but since fishing is reported unsatisfactory, there is no selling pressure. Meal is quoted at $120.00 for 60 per cent protein grade, and $125.00 for 65 per cent.

Phosphate Rock.—The demand continues for more than the current supply.

Superphosphate.—Concentrated continues definitely firm and tight, while normal seems to be in ample supply and moving regularly on contracts.

Potash.—The supply position continues tight, and demand is reported in excess of production with no relief in sight.

Davison Reports Profitable Year

The annual report of the Davison Chemical Corporation for the year ended June 30, 1948, shows net sales for the year amounting to $33,546,479. Net income, after provision for income taxes, amounted to $2,604,127, equivalent to $5.06 per share of capital stock outstanding. The dollar volume of sales and the net income were the largest in the Corporation's history.

The working capital at June 30, 1948 amounted to $10,236,189, an increase of $1,817,607 over the previous year and the earned surplus amounted to $8,816,359, an increase of $1,961,460 during the year. The capital stock and surplus totaled $18,472,156, representing a book value of $35.93 per share for the 514,134 shares of capital stock outstanding.

Additions and replacements of property, plant and equipment during the year, including purchase and subsequent improvements to a superphosphate and fertilizer plant at Perry, Iowa, aggregated $2,075,219.

The Perry, Iowa, plant was purchased by the Corporation because of its desirable location in a growing fertilizer consuming area and its potential contribution to the fertilizer division's earnings. Pursuing further its policy of selective restriction of fertilizer operations to areas in which it is believed such operations can be soundly maintained, regardless of general economic conditions, the Corporation discontinued operation of the plant at Bridgeport, Connecticut, heretofore operated by its wholly owned subsidiary, The Berkshire Chemical Company, and has disposed of the physical plant assets at that location.

Obituaries

W. H. Gordon

W. H. Gordon, vice-president of Chamberlin & Barclay, Inc., Cranbury, N. J., died on September 1st. He was 61 years of age. Mr. Gordon was a native of Cranbury and spent his entire life there. He first became associated with Chamberlin & Barclay in 1910.

Mr. Gordon took an active interest in fertilizer industry affairs and served as a director of the National Fertilizer Association from 1942 until the time of his death.

A highly respected leader in his home community, for many years he served as a member of the local Township Committee. He was a director of the First National Bank of Cranbury and a member of the New Jersey Potato Industry Committee.

W. R. Huey

William Robinson Huey, general traffic manager of the Bemis Bro. Bag Co., died on August 22nd at his home in Evanston, Illinois, following a long illness. He was 69 years old.

Formerly with the Wabash Railroad Com-

Keyed SERVICE!

Fertilizer plants all over the country—large and small—state their needs and we meet them. Large stocks of seasoned materials and ample modern production facilities enable us to make prompt shipments.

TRIPLE SUPERPHOSPHATE

46 to 48% Available Phosphoric Acid

•

We also manufacture

HIGH-GRADE SUPERPHOSPHATE

•

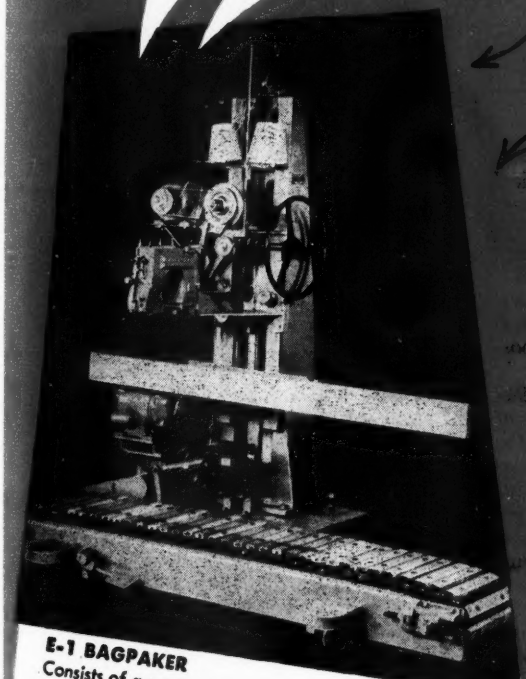
U. S. Phosphoric Products
Division
TENNESSEE CORPORATION
Tampa, Florida

New York Office:
61 Broadway
Washington, D. C.
440 The Woodward Bldg.

Sales Agents:
Bradley & Baker
155 East 44th St.
New York, N. Y.

A Mark of FLORIDA TRIPLE PHOSPHATE *Reliability*

CLOSES BAGS DEPENDABLY
-AT HIGH SPEEDS!



Cut your packaging time with an E-1 Bagpaker®. It's ultra-fast . . . clips operating time in closing heavy-duty multiwall paper bags. Operators close up to 15 per minute, hour after hour on this rugged, reliable machine.

E-1 BAGPAKER
Consists of a sewing head mounted over a conveyor and synchronized with it. A single foot pedal controls both conveyor and sewing head. Portable, simple to operate and heavy duty throughout for hard, continuous usage. Handles both paper and textile bags.

You Get a Tough, Safe Stitch

The E-1 Bagpaker sews an ideal closure. It's the famous "cushion-stitch" that absorbs all strains of handling or dropping, and doesn't pull through your bag walls. Strong and easy to open, it makes your packaged fertilizer or feed a better seller. Write for details.

BAGPAK
DIVISION

INTERNATIONAL PAPER COMPANY, Bagpak Division • 220 East 42nd Street, New York 17

Branch Offices: Atlanta, Baltimore, Boston, Chicago, Cleveland, Baxter Springs, Kans., Los Angeles, New Orleans, Philadelphia, Pittsburgh, St. Louis, Syracuse.
In Canada: Continental Paper Products, Ltd., Montreal, Ottawa.

pany, Mr. Huey joined Bemis in 1918 at St. Louis and was in charge of traffic there until his appointment as general traffic manager at Chicago in 1934. He had wide experience in traffic administration and was well known in railroad circles throughout the country. He was at one time president of the St. Louis Traffic Club.

International Reports Increased Sales and Earnings

International Minerals and Chemical Corporation reported net earnings of $5,016,028 after all charges for the fiscal year ended June 30, 1948, as compared with $3,826,992 for the previous fiscal year in its 39th annual report.

Net profits per common share for the year were $5.85 on the 789,780 shares outstanding, as compared with $4.35 per share last year on the 788,155 shares then outstanding.

Net sales amounted to $50,123,269, showing an increase of 21 per cent over sales of $41,302,250 last year, and an increase of 46 per cent over sales of $34,373,106 for the fiscal year ended June 30, 1946.

"For the fourth year in a row sales and earnings have exceeded the previous year's records," Louis Ware, president of the company, said in a letter to the stockholders accompanying the report. He added, "It is encouraging to note how well these figures reflect the policy of greater diversification and expansion upon which the corporation embarked some years ago.

"While confronted with rising costs of labor and supplies, there have been plant improvements and increased volume which afforded the opportunity for earning a profit in keeping with the increased business.

"Additions to fixed assets during the year aggregated $9,349,619. The amino plant at San Jose, California, was complete. The Noralyn phosphate mine at Bartow, Florida, was finished. A sulphuric acid plant at Lockland, Ohio, was built and other miscellaneous plant additions were made.

"All previous sales records of the plant food division were broken with an increase in the tonnage of products distributed of 14 per cent over the previous year. Maximum tonnage shipments for the coming year will again be limited by the shortage of nitrogen, which is purchased by the corporation.

"The construction of new plant food mixing plants at Somerset, Kentucky, Winston-Salem, North Carolina, and sulphuric acid plants at Lockland, Ohio, and Spartanburg, South Carolina, were completed during the year. To provide for the increased demand for Multiphos, a phosphorous mineral additive used in animal and poultry feeds, additional plant capacity is being constructed at Wales, Tennessee.

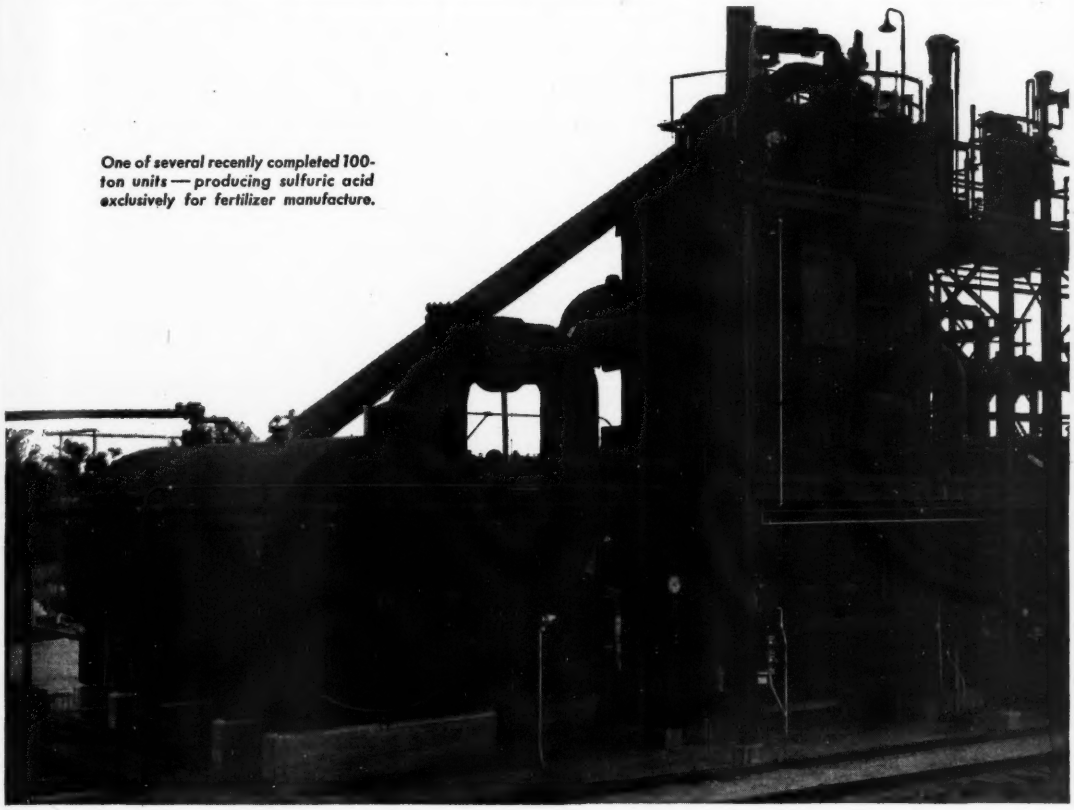
"Advance in freight rates, labor and raw material costs indicate that fertilizer prices will advance again this year, although their relation to other prices will still remain favorable to farmers.

"The continued shortage of food and agricultural products plus the continuance of soil conservation activities by the government, as well as extension of farm price supports make more assured the continued heavy demand for plant food.

"Tonnage and profits of the potash division exceeded that of the previous year, as the Carlsbad, New Mexico, mine and refinery operated at maximum capacity. Larger volume and greater efficiency offset higher wages and other increased costs.

With the potash contracting year com-

JAITE
HEAVY DUTY MULTI-WALL PAPER BAGS
OFFER DEPENDABLE PROTECTION FOR
YOUR FERTILIZER
THE JAITE COMPANY
"Manufacturers of Paper and Paper Bags"
JAITE, OHIO
"IT'S IN THE J BAG"
SINCE 1905



One of several recently completed 100-ton units — producing sulfuric acid exclusively for fertilizer manufacture.

Improved sulfuric acid production

A MONSANTO SERVICE TO THE FERTILIZER INDUSTRY

If you are interested in the production of sulfuric acid, you can benefit from the many phases of Monsanto's long experience—both in the manufacture of sulfuric acid and the design of complete sulfuric acid plants.

Many sulfuric acid manufacturers have commissioned Monsanto's Engineering Sales Department to undertake the complete job of replacing obsolete units, to expand their capacity with new contact plants, or to supply vanadium catalyst. Economical operation is an outstanding feature of these Monsanto plants—they are simple in design, easy to operate, low in maintenance and produce acid of exceptional purity.

Standard units range in size from 10 to 500 tons of 100% acid daily, with no equipment in parallel.

Further information on any phase of this sulfuric acid plant design service will be supplied on request. Write to MONSANTO CHEMICAL COMPANY, Engineering Sales Department, 1700 South Second Street, St. Louis 4, Missouri. If you prefer, simply fill in and return the coupon . . . A Monsanto representative will get in touch with you promptly.

MONSANTO
CHEMICALS — PLASTICS

MONSANTO CHEMICAL COMPANY
Engineering Sales Department
1700 South Second Street, St. Louis 4, Missouri

Please contact me regarding Monsanto's services for improving sulfuric acid production.

Name_____ Title_____

Company_____

Address_____

City_____ State_____

SERVING INDUSTRY...WHICH SERVES MANKIND

mencing June 1, 1947, potash salts were sold on a basis f.o.b. mine at Carlsbad, as the American potash industry discarded the system of basing its prices as of at the major United States coastal ports, which it had been forced to do in its early days in competition with the European potash which was delivered to our coastal ports.

"Entry of the potash division in a major way into the heavy and industrial chemical fields will begin in the spring of 1949 with the completion of a major plant addition at Carlsbad, which will provide a production of chemical grade potassium chloride and an improved quality of potassium sulfate for agricultural and industrial uses.

"The largest and most efficient phosphate mine in the industry was finished this spring at Bartow, Florida. This Noralyn mine was designed to meet the anticipated growing demand for high grade phosphates, both for domestic and export business. The Peace Valley mine, also in Florida, operated at capacity and attained the record production of over one million tons of phosphate rock, which is the greatest production ever realized from a single phosphate mine in this country.',

E. A. Johnson Appointed Bemis General Traffic Manager

Erik A. Johnson has been appointed General Traffic Manager of Bemis Bro.. Bag Co. at Chicago, succeeding W. R. Huey, who died August 22.

Mr. Johnson joined Bemis at Brooklyn in 1921 as foreman in charge of shipping and receiving. He has been Traffic Manager at the Bemis Brooklyn plant since 1926 and has also handled traffic for the company's Boston Jute Department for many years. For the past two years he has been a director and chairman of the Traffic Committee of the Merchants and Manufacturers Association of Bush Terminal, Brooklyn.

Philippine Sulphate of Ammonia Plant Opened

The construction of a sulphate of ammonia plant in connection with the Maria Christina hydroelectric power project in the Philippine Republic has been reported as being in the "planning" stage. The plant is expected to have an annual capacity of 126,000 tons of sulphate of ammonia. The ammonia will be produced synthetically and the sulphuric acid plant will make use of pyrites from the island of Panay as part of its raw material.

Phosphate Rock in the Western States

Production of phosphate rock in the Rocky Mountain States more than doubled during 1947, according to the figures of the U. S. Bureau of Mines. The output from the states of Idaho, Montana, Wyoming and Utah came to 1,193,288 long tons, an increase of 142 per cent over the 1946 production of 492,602 long tons. Value at the mines increased from $3,012,15 in 1946 to $6,762,630 in 1947. The Bureau reports three companies operating in Idaho, with an output of 905,214 tons; four companies in Montana who produced 236,229 tons; two companies in Wyoming with 51,845 tons. In Utah only a small amount was produced for use in iron blast furnaces.

WESTERN PHOSPHATE ROCK PRODUCTION
(long tons)

	Idaho	Montana	Wyoming	Total
1947	905,214*	236,229	51,845	1,193,288
1946	312,658*	179,944	.....	492,602
1945	123,340	150,858	.....	274,198
1944	112,565	186,434	.....	298,999
1943	108,916	119,764	.....	228,680

*Includes Utah.

CLASSIFIED ADVERTISEMENTS

OPPORTUNITIES in many communities for the Purina Franchise—Purina Chows for livestock and poultry, Sanitation Products, Farm Supplies under Checkerboard label, rural America's best known trademark. Find out what being a Purina Dealer can mean to you. Dealership areas now open. No obligation. Write Dept. C., Ralston Purina Co., 2507 Checkerboard Square, St. Louis 2, Mo.

FOREMAN for Fertilizer Plant in Baltimore Area. Must be familiar with fertilizer plant operation. Steady employment at good salary. Address "245" care The American Fertilizer, Philadelphia 3, Pa.

Stedman
FERTILIZER PLANT
EQUIPMENT
Dependable for Fifty Years

All-Steel Self-Contained Fertilizer Mixing Units
Batch Mixers—Dry Batching
Pan Mixers—Wet Mixing
Swing Hammer and Cage Type Tailings Pulverizers
Vibrating Screens
Dust Weigh Hoppers
Acid Weigh Scales

STEDMAN'S FOUNDRY & MACHINE WORKS
AURORA, INDIANA, U. S. A. Founded 1834

FARMING IN THE DESERT

Today, irrigation and cultivation make rich farm lands out of some of this country's most arid areas. Here are now being harvested some of our most useful and profitable crops—thanks to the man-made provision of sufficient water, and to the wise use of fertilizer. Many of these fertilizers are compounded with potash—often with Sunshine State Potash, a product of New Mexico. This outstanding soil nutrient increases soil fertility, and insures greater resistance to plant diseases and drought.

SUNSHINE STATE POTASH A PRODUCT OF NEW MEXICO U.S.A.

Reg. U. S. Pat. Off.

HIGRADE MURIATE OF POTASH 62/63% K_2O
GRANULAR MURIATE OF POTASH 48/52% K_2O
MANURE SALTS 22% MIN. K_2O

UNITED STATES POTASH COMPANY, *Incorporated*, 30 Rockefeller Plaza, New York 20, N. Y.

APPLYING FERTILIZER THROUGH IRRIGATION WATER

(Continued from page 8)

that the cheaper sources of phosphorus are not readily soluble. Prince and Tiedgens[3] of New Jersey found that much of the phosphate in mixed fertilizers could not be dissolved in water. Even at low concentrations (3 pounds in 50 gallons of water) over 50 per cent of the phosphorus in some of the mixtures failed to dissolve. This low solubility of the phosphorus in mixed ferilizer is due to the fact that the phosphorus is supplied as superphosphate. If an attempt is made to apply superphosphate through irrigation water, the undissolved portion must be discarded or forced through the system in suspension. In order to force solid fertilizer through the sprinklers it would be necessary to grind it finer than is generally done and provide some agitation equipment to keep the material in suspension. Even with very finely ground fertilizer there would be serious danger of clogging the sprinklers. Soluble forms of phosphorus are too expensive as sources of phosphorus for large areas.

Quantities of Fertilizer to Apply

Ammonium sulphate is the least soluble of the three nitrogen fertilizers previously mentioned. It is soluble to the extent of 280 pounds in 50 gallons of water. The same amount of water will dissolve 108 pounds of potassium chloride. If great quantities of both potassium and nitrogen fertilizers are applied, owing to high rates or large areas per sprinkler setting, it is desirable to dissolve the fertilizers separately. When combined at high concentrations, these two materials react to form potassium sulphate which is much less soluble.

Fertilizers dissolve quite readily at low concentrations but as the saturation point is approached, considerable stirring is necessary. In such cases, it might be desirable to provide a mixing tank having a larger volume than a barrel.

Summary

The application of fertilizer through irrigation water is another method which is theoretically sound for nitrogen and potash but not for phosphorus. It seems to be an especially desirable method for applying nitrogen during midseason. It is suggested that a little nitrogen, all the phosphorus and most of the potassium be applied in bands at planting time and that supplementary nitrogen and potassium be applied when tests or observations indicate a need.

Fertilizer should be dissolved in water in a barrel or other suitable container and introduced into the pipe line while irrigation water is being applied. If the pump is of the centrifugal type, the solution is taken into the intake line. In the case of a deep-well turbine, the solution must be forced into the discharge line under higher pressure than that developed by the pump.

[3] New Jersey Agricultural Experiment Station, Circular 449,1942.

PERMANENT SOIL PROGRAM

(Continued from page 9)

time discounts on both costs and benefits, when cost benefit ratios are used to test the justification of a public development project.

At present, we have numerous federal, state, local and private agencies undertaking to perform the over-all problem of planning and developing major watersheds in a largely un-coordinated and often wasteful conflicting way. One sometimes hears it said that soil conservation is something the farmer should and could do unassisted by the government. In flood control surveys made by the United States Department of Agriculture, the Trinity

ALEX. M. McIVER & SON

BROKERS

Specializing
SULPHURIC ACID
Nitrogenous Materials
Blood and Fertilizer Tankage
Phosphate Rock
"Riceland" Ground Rice Hulls
Representatives
Arkansas Rice Growers Coop. Ass'n
Bags
Ammoniated Base and Superphosphate
Dolomitic Lime
(42–44%) Magnesium Carbonate
Oil Mill Products

PEOPLES OFFICE BUILDING
Charleston, South Carolina
Phones: 2–4627—L.D. 921—922

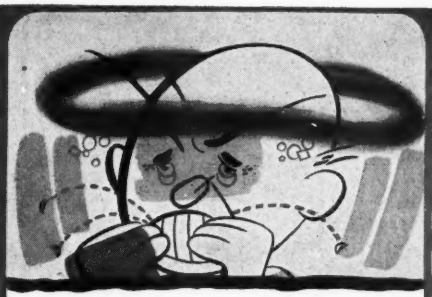
BEMIS MINUTE MOVIES

FOR SHIPPERS WHO WANT TO SAVE TIME AND MONEY

★ ★ ★

FERDIE,

THE FERTILIZER THAT WALKED IN HIS SLEEP



1. Ferdie is a special fertilizer... has the jitters ...is hard to control.

2. Formerly he sifted about in storage... went sleep walking and wasted his strength.

3. He needed better packaging... got it in Bemis Waterproof Bags. Now he sleeps like a baby through long days and nights in storage.

4. And Ferdie's rarin' to go when it's time to work.

Special fertilizers and chemical nitrogen fertilizers often sift out of ordinary containers and cause additional loss by damaging products nearby. They need the protection of Bemis Waterproof Laminated Textile Bags. These bags are extra sturdy... they resist tears and punctures. They are fully tested *before* they're put to work. *These pre-tests stop protests*... assure complete satisfaction.

Guard your fertilizers during shipments and keep them safe in storage with Bemis Waterproof Bags. Mail coupon now for prices and complete information.

BEMIS BRO. BAG CO.

Waterproof Department

Nation-wide Production and Sales

BEMIS Waterproof BAGS

Bemis Bro. Bag Co.
408-N Pine Street, St. Louis 2, Mo.
Send details about Bemis Waterproof Bags for fertilizer.

Name_____

Company_____

Street_____

City_____ Zone____ State_____

River watershed, the Tallahatchie and many other watershed projects, it was found that more than half of all benefits from soil conservation work on many individual farms or on whole groups of farms accrue to off-farm beneficiaries lower in the drainage basin. This can mean only that soil conservation is both of a private and social concern. Sound soil conservation simply cannot be dealt with equitably and soundly without joint private and public planning and development. If soil conservation on a specific farm partakes of this complex nature, obviously irrigation, siltation, flood damage, and power generation and distribution problems of a major watershed require, to a great extent, coordinated development.

Only in the planning and development of the Tennessee Valley have we ever approached the accomplishment of coordinated and integrated watershed development. Yet, this effort falls far short of the desirable. Especially the method of administering this development would be undesirable if it were multiplied into 15 or 20 other watershed authorities that blanketed the entire nation. If the nation were covered with such independent powerful government bureaus (for that is actually what the TVA is) these authorities would become politically and dangerously powerful. Each would become largely independent once it secured its annual appropriation if this appropriation authorized them to build up large permanent professional and technical staffs, and in time all national functions such as national policies, of reclamation, soil conservation, reforestation, flood control, and power generation and use would be broken down or dissipated into separate watershed policies and functions. Such powerful geographically distributed independent bureaus staffed with large technical and professional staffs I believe, would be dangerous for our democracy and for the unity of the nation.

We must work out a plan of administering this complex job of water and land use and development in such a way that we will not in so doing break up or destroy the great national functions or policies of soil conservation, reclamation, flood control, and power development and other similar necessary national functions.

It seems to me that coordinated watershed development cannot be sensibly and soundly broken up into numerous independent locally functioning units similar to TVA. Unified watershed development can be accomplished, and yet preserve national policies, by having a watershed board and an administrative staff only for each of the major watersheds; and not permit these authorities to employ their technical and professional staffs but compel them to use the engineers of the Army Corps of Engineers for flood control planning and development, use the Reclamation Service personnel for irrigation, the Soil Conservation Service for soil conservation work, and the personnel of various state and local authorities for other professional or technical services of planning and development. These specialists assigned to the watershed would all work together as a unified group under the direct supervision of the watershed board, on an acceptable over-all plan of development of all aspects of the major watershed. Construction specialists from these various agencies could then be assigned to the watershed board for development of the watershed plans.

Each watershed board would have charge of funds appropriated for the development on its watershed. Assigned personnel to work on watersheds from the various national agencies could be paid in part or in whole from watershed funds while working on the watershed. In this way it is believed the advantages of centralized administration of a watershed development such as the TVA could be obtained, yet full and coordinated use of presently constituted national and state resources development personnel could be made. The use of the technical and professional personnel of national functions would assure a full use and preservation of national policies. We would thus avoid, it is believed, the wasteful un-coordinated and often conflicting present patch-work development of our land and water resources.

Interest of Fertilizer Industry

The fertilizer industry has just as much direct and vital interest as have farmers in a sound and full development and conservation of our land and water resources. Total ultimate demands for fertilizer everywhere, in

KENT MILL COMPANY
60 BOWNE ST., BROOKLYN 31, N. Y.
CRUSHING, GRINDING, PULVERIZING,
AND AIR SEPARATING MACHINERY.
FOR
LIMESTONE, GYPSUM, BARYTES, PHOSPHATE ROCK AND OTHER MATERIALS

POTASH
TRONA
SALTS

Trona
Muriate of Potash

Potash, one of the important ingredients of mixed fertilizer, is a vital soil nutrient which aids crop production and helps resist plant diseases. To provide the maximum of this important plant food, we are operating full capacity at Trona, 24 hours a day.

Three Elephant Borax

Agricultural authorities have shown that a lack of Boron in the soil can result in deficiency diseases which seriously impair the yield and quality of crops. When Boron deficiencies are found, follow the recommendations of your local County Agent or State Experimental Stations.

AMERICAN POTASH & CHEMICAL CORPORATION

122 EAST 42nd STREET • • • NEW YORK 17, N. Y.

231 S. LA SALLE STREET
CHICAGO 4, ILLINOIS

214 WALTON BUILDING
ATLANTA 3, GEORGIA

3030 WEST SIXTH STREET
LOS ANGELES 54, CALIF.

"Pioneer Producers of Muriate in America"

humid and sub-humid areas, rests inescapably on the maximum water available for plant life. Enormous amounts of research need to be done in both the field of water and soil utilization and in the field of maximum potential economic use of fertilizer.

The whole field of the maximum economic absorption of minerals by plants in relation to water availability must be studied; far greater development of irrigation into hitherto unprofitable sub-humid areas will probably be found feasible when fullest use of fertilizer is made with the added water that comes from maximum sound watershed development; new fields of use of minor minerals for increasing the health giving qualities and the palatability of foods open up visions of great expanded profitable use of fertilizer; the new and yet untouched field of control of weed growth by sprays and flame offer new vistas of efficient use of plant food; the great future contined food-population pressure in the world demands of the fertilizer industry the broadest possible long-time responsibility in meeting these expanded food requirements; and finally, aside from the probable future numerical growth of mankind the present world-wide movement for raising the standard of living of great masses of our own peoples but especially the hordes of other peoples in the world calls for a most enlightened social viewpoint by the fertilizer industry. It is not, in the least, I am sure, an over-emphasis to state that your industry is surely in the very midst of revolutionary expansion. If this expansion is made with wisdom it will contribute greatly to the social welfare of the nation and the world.

Obviously maximum use of water resources in all sections of our land will bring maximum potential use of fertilizer in the future. As we learn more and more about the intimate complex relations between water and fertilizer use both on cultivated crops and pastures, and as we learn to eliminate by spraying and otherwise all wasteful use of added fertilizer and water by non-economic weeds and plants, we shall indeed be approaching the maximum potential production of food from our natural land and water resources in combination with added productive power that comes from manufactured plant food. The second post-Malthus century will doubtless be characterized by great expansion of food and a further striking postponement of the Malthusian hazards, not by expansion into drier and drier lands as during the first post-Malthus century, but by expanded efficient use of land, water, and fertilizer on the presently used lands of the world.

In closing, I would like to emphasize that, from the long range viewpoint, expanded requirement for food in the nation and the world, and rapid expansion in the over-all job of soil and water conservation, both emphasize greatly expanded future use of fertilizer. Present fertilizer shortages are in reality a partial reflection or forecast of this expanded fertilizer requirement. In its recent April 17 report the Council of the F.A.O. stated on the world fertilizer situation that "The Council wishes to record its opinion that further increases" (in fertilizers) "must be anticipated. High priority should, therefore, be given in industrial planning to the development of nitrogen fertilizer production. Attention should also be given to the fact that requirement for phosphate and potash fertilizers will be much greater than has been anticipated."

Challenge to Fertilizer Industry

The industry must clearly foresee this future trend and must not hesitate to provide for these needs. The Grange is a strong believer in the desirability of private enterprise meeting these needs. We would be remiss with you, however, if we did not say to you in candor that we are impatient with the present seeming reluctance of the industry to meet current needs and will support public means of meeting these current shortages if the industry fails to meet the legitimate demands of farmers as to quantity, quality and price of fertilizers. We are not referring to relief if and when agricultural prices slump; we want fertilizer relief under present conditions. We insist that the fertilizer industry must adequately meet current needs and should fight along with farmers for a stable equitable income for farmers that will maintain a heavy profitable demand for fertilizers by farmers. We are aware of the tremendous increase in fertilizer production which the industry has achieved in the past eight years. Also we are aware of the fact that fertilizer prices have not risen as much as most other prices. All this is clearly to the credit of the fertilizer industry, but let us not forget that we measure success not by how far we have gone but how close we come to achieving our mission. Fertilizer production and fertilizer prices must be measured against present technical potentialities. If there ever was an industry required to meet the acid test of a socially-sound program to prove the great superiority of our economic system in contrast to that of communism, your industry is now and here faced with that responsibility.

RELIABLE!

Fulton QUALITY TEXTILE Bags

As reliable as ol' Dobbin, that's FULTON TEXTILE BAGS. Farmers know that these sturdy, long lasting bags, with their many after uses on the farm, are almost a guarantee of a quality product. They prefer fertilizer in FULTON TEXTILE BAGS because textile bags are stronger, easier to handle, and seldom break. Their many after uses are a bonus for the farmer and his family.

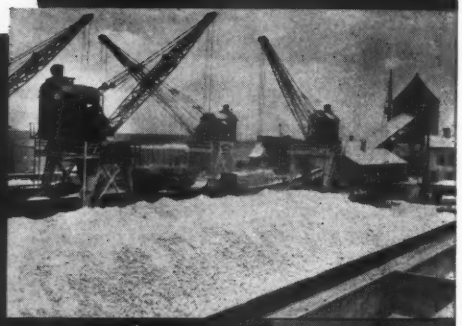
FULTON BAG & COTTON MILLS

Manufacturers Since 1870

ATLANTA ST. LOUIS DENVER NEW YORK LOS ANGELES
DALLAS NEW ORLEANS MINNEAPOLIS KANSAS CITY, KAN.

Producers of

SULPHUR



Large stocks at our mines make possible prompt shipments

Uniformly high purity of 99½% or better

Free of arsenic, selenium and tellurium

TEXAS GULF SULPHUR CO. INC.

75 East 45th St. New York 17, N. Y.

Mines: Newgulf and Moss Bluff, Texas

BUYERS' GUIDE • A CLASSIFIED INDEX TO ALL THE ADVERTISERS IN "THE AMERICAN FERTILIZER"

AMMONIA—Anhydrous and Liquor
Commercial Solvents Corp., New York City
Spencer Chemical Co., Kansas City, Mo.

AMMONIUM NITRATE
Lion Oil Co., El Dorado, Ark.
Spencer Chemical Co., Kansas Cy, Mo.

BAG MANUFACTURERS—Burlap
Bemis Bros. Bag Co., St. Louis, Mo.
Chase Bag Co., Chicago, Ill.
Fulton Bag & Cotton Mills, Atlanta, Ga.
Virginia-Carolina Chemical Corp., Richmond, Va.

BAG MANUFACTURERS—Cotton
Bemis Bro. Bag Co., St. Louis, Mo.
Chase Bag Co., Chicago, Ill.
Fulton Bag & Cotton Mills, Atlanta, Ga.
Virginia-Carolina Chemical Corp., Richmond, Va.

BAG MANUFACTURERS—Paper
Bemis Bro. Bag Co., St. Louis, Mo.
Chase Bag Co., Chicago, Ill.
Fulton Bag & Cotton Mills, Atlanta, Ga.
Hammond Bag & Paper Co., Welisburg, W. Va.
International Paper Co., Bagpak Div., New York City
Jaite Company, The, Jaite, Ohio
Raymond Bag Co., Middletown, Ohio
St. Regis Paper Co., New York City

BAGS—Dealers and Brokers
Ashcraft-Wilkinson Co., Atlanta, Ga.
Huber & Company, New York City
McIver & Son, Alex. M., Charleston, S. C.

BAG CLOSING MACHINES
St. Regis Paper Co., New York City
Union Special Machine Co., Chicago, Ill.

BAG PRINTING MACHINES
Schmutz Mfg. Co., Louisville, Ky.

BAGGING MACHINES—For Filling Sacks
Atlanta Utility Works, The, East Point, Ga.
St. Regis Paper Co., New York City
Sackett & Sons Co., The A. J., Baltimore, Md.
Sturtevant Mill Company, Boston, Mass.

BONE BLACK
American Agricultural Chemical Co., New York City
Armour Fertilizer Works, Atlanta, Ga.
Huber & Company, New York City

BONE PRODUCTS
American Agricultural Chemical Co., New York City
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
Davidson Commission Co., The, Chicago, Ill.
Huber & Company, New York City
Jackle, Frank R., New York City.
McIver & Son, Alex. M., Charleston, S. C.
Woodward & Dickerson, Inc., Philadelphia, Pa.

BORAX AND BORIC ACID
American Potash and Chem. Corp., New York City

BROKERS
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
Davidson Commission Co., The, Chicago, Ill.
Huber & Company, New York City
Jackle, Frank R., New York City.
Keim, Samuel D., Philadelphia, Pa.
McIver & Son, Alex. M., Charleston, S. C.
Schrock Fertilizer Service, Congerville, Ill.
Woodward & Dickerson, Inc., Philadelphia, Pa.

BUCKETS—For Hoists, Cranes, etc.
Hayward Company, The, New York City

BUCKETS—Elevator
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

CARS AND CARTS
Atlanta Utility Works, The, East Point, Ga.
Hough Co., The Frank G., Libertyville, Ill.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind

CHEMICALS
American Agricultural Chemical Co., New York City
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
Commercial Solvents Corp., New York City
Davison Chemical Corporation, Baltimore, Md.
Huber & Company, New York City
International Minerals & Chemical Corporation, Chicago, Ill.
Lion Oil Company, El Dorado, Ark.
McIver & Son, Alex. M., Charleston, S. C.
Spencer Chemical Co., Kansas City, Mo.
Virginia-Carolina Chemical Corp., Richmond, Va.
Woodward & Dickerson, Inc., Philadelphia, Pa.

CHEMISTS AND ASSAYERS
Gascoyne & Co., Baltimore, Md.
Shuey & Company, Inc., Savannah, Ga.
Wiley & Company, Baltimore, Md.

CONDITIONERS
Arkansas Rice Growers Corp. Assn., Stuttgart, Ark
Jackle, Frank R., New York City.
Keim, Samuel D., Philadelphia, Pa.

COTTONSEED PRODUCTS
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
Huber & Company, New York City
Jackle, Frank R., New York City.
McIver & Son, Alex. M., Charleston, S. C.
Woodward & Dickerson, Inc., Philadelphia, Pa.

CYANAMID
American Agricultural Chemical Co., New York City
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City

DRYERS
Sackett & Sons Co., The A. J., Baltimore, Md.

ENGINEERS—Chemical and Industrial
Monsanto Chemical Co., St. Louis, Mo.
Chemical Construction Corp., New York City
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.
Sturtevant Mill Company, Boston, Mass.
Titlestad Corporation, Nicolay, New York City

FERTILIZER (Mixed) MANUFACTURERS
American Agricultural Chemical Co., New York City
Armour Fertilizer Works, Atlanta, Ga.
Davison Chemical Corporation, Baltimore, Md.
International Minerals & Chemical Corporation, Chicago
Southern States Phosphate & Fertilizer Co., Savannah,
Virginia-Carolina Chemical Corp., Richmond, Va.

FISH SCRAP AND OIL
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
Huber & Company, New York City
Jackle, Frank R., New York City.
McIver & Son Alex. M., Charleston, S. C.
Woodward & Dickerson, Inc., Philadelphia, Pa.

FOUNDERS AND MACHINISTS
Atlanta Utility Works, The, East Point, Ga.
Sackett & Sons Co., The J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

A Classified Index to Advertisers in "The American Fertilizer"

BUYERS' GUIDE

For an Alphabetical List of all the Advertisers, see page 33

HOPPERS
Atlanta Utility Works, The, East Point, Ga.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.
Sturtevant Mill Company, Boston, Mass.

IMPORTERS, EXPORTERS
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
Southern States Phosphate & Fertilizer Co., Savannah, Ga.
Woodward & Dickerson, Inc., Philadelphia, Pa.

INSECTICIDES
American Agricultural Chemical Co., New York City

LEAD BURNERS
Southern Lead Burning Co., Atlanta, Ga.

LIMESTONE
American Agricultural Chemical Co., New York City
Ashcraft-Wilkinson Co., Atlanta, Ga.
McIver & Son, Alex. M., Charleston, S. C.

LOADERS—Car and Wagon
Hough Co., The Frank G., Libertyville, Ill.
Sackett & Sons Co., The A. J., Baltimore, Md.

MACHINERY—Acid Making and Handling
Atlanta Utility Works, The, East Point, Ga.
Chemical Construction Corp., New York City
Monarch Mfg. Works, Inc., Philadelphia, Pa.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

MACHINERY—Ammoniating
Sackett & Sons Co., The A. J., Baltimore, Md.
Sturtevant Mill Company, Boston, Mass.

MACHINERY—Elevating and Conveying
Atlanta Utility Works, The, East Point, Ga.
Hough Co., The Frank G., Libertyville, Ill.
Hayward Company, The, New York City
Link-Belt Co., Chicago, Ill.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.
Sturtevant Mill Company, Boston, Mass.

MACHINERY—Grinding and Pulverizing
Atlanta Utility Works, The, East Point, Ga.
Bradley Pulverizer Co., Allentown, Pa.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.
Sturtevant Mill Company, Boston, Mass.

MACHINERY—Material Handling
Atlanta Utility Works, The, East Point, Ga.
Hayward Company, The, New York City
Hough Co., The Frank G., Libertyville, Ill.
Link-Belt Co., Chicago, Ill.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.
Sturtevant Mill Company, Boston, Mass.

MACHINERY—Mixing, Screening and Bagging
Atlanta Utility Works, The, East Point, Ga.
Link-Belt Co., Chicago, Ill.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.
Sturtevant Mill Company, Boston, Mass.

MACHINERY—Power Transmission
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

MACHINERY—Superphosphate Manufacturing
Atlanta Utility Works, The, East Point, Ga.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.
Sturtevant Mill Company, Boston, Mass.

MANGANESE SULPHATE
McIver & Son, Alex. M., Charleston, S. C.

MINORELEMENTS
Tennessee Corporation, Atlanta, Ga.

MIXERS
Atlanta Utility Works, The, East Point, Ga.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.
Sturtevant Mill Company, Boston, Mass.

NITRATE OF SODA
American Agricultural Chemical Co., New York City
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
Huber & Company, New York City
International Minerals & Chemical Corporation, Chicago, Ill
McIver & Son, Alex. M., Charleston, S. C.

NITROGEN SOLUTIONS
Lion Oil Company, El Dorado, Ark.
Spencer Chemical Co., Kansas City, Mo.

NITROGENOUS ORGANIC MATERIAL
American Agricultural Chemical Co., New York City
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J. New York City
Davidson Commission Co., The, Chicago, Ill.
Huber & Company, New York City
International Minerals & Chemical Corporation, Chicago, Ill
Jackle, Frank R., New York City.
McIver & Son. Alex. M., Charleston, S. C.
Woodward & Dickerson, Inc., Philadelphia, Pa.

NOZZLES—Spray
Monarch Mfg. Works, Philadelphia, Pa.

PHOSPHATE ROCK
American Agricultural Chemical Co., New York City
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
Huber & Company, New York City
International Minerals & Chemical Corporation, Chicago, Ill.
McIver & Son, Alex. M., Charleston, S. C.
Virginia-Carolina Chemical Corp., Richmond, Va.

PLANT CONSTRUCTION—Fertilizer and Acid
Atlanta Utility Works, The, East Point, Ga.
Chemical Construction Corp., New York City
Monsanto Chemical Co., St. Louis, Mo.
Sackett & Sons Co., The A. J., Baltimore, Md.
Southern Lead Burning Co., Atlanta, Ga.
Stedman's Foundry and Mach. Works, Aurora, Ind.
Sturtevant Mill Company, Boston, Mass.
Titlestad Corporation, Nicolay, New York City

POTASH SALTS—Dealers and Brokers
American Agricultural Chemical Co., New York City
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
Huber & Company, New York City
International Minerals & Chemical Corporation, Chicago, Ill.
Jackle, Frank R., New York City.

POTASH SALTS—Manufacturers
American Potash and Chem. Corp., New York City
Potash Co. of America, New York City
International Minerals & Chemical Corporation, Chicago, Ill.
United States Potash Co., New York City

PRINTING PRESSES—Bag
Schmutz Mfg. Co., Louisville, Ky.

PYRITES—Brokers
Ashcraft-Wilkinson Co., Atlanta, Ga.

REPAIR PARTS AND CASTINGS
Atlanta Utility Works, The, East Point, Ga.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

BUYERS' GUIDE

SCALES—Including Automatic Bagging
Atlanta Utility Works, The, East Point, Ga.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

SCREENS
Atlanta Utility Works, The, East Point, Ga.
Link-Belt Co., Chicago, Ill.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.
Sturtevant Mill Company, Boston, Mass.

SEPARATORS—Air
Kent Mill Co., Brooklyn, N. Y.
Sackett & Sons Co., The A. J., Baltimore, Md.
Sturtevant Mill Co., Boston, Mass.

SPRAYS—Acid Chambers
Monarch Mfg. Works, Inc., Philadelphia, Pa.

SULPHATE OF AMMONIA
American Agricultural Chemical Co., New York City
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
Huber & Company, New York City
Jackle, Frank R., New York City.
McIver & Son, Alex. M., Charleston, S. C.
Woodward & Dickerson, Inc., Philadelphia, Pa.

SULPHUR
Ashcraft-Wilkinson Co., Atlanta, Ga.

SULPHURIC ACID
American Agricultural Chemical Co., New York City
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
Huber & Company, New York City
International Minerals & Chemical Corporation, Chicaro, Ill.
McIver & Son, Alex. M., Charleston, S. C.
Southern States Phosphate Fertilizer Co., Savannah, Ga.
U. S. Phosphoric Products Division, Tennessee Corp., Tampa, Fla.
Virginia-Carolina Chemical Corp., Richmond, Va.

SUPERPHOSPHATE
American Agricultural Chemical Co., New York City
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
Davison Chemical Corporation, Baltimore, Md.
Huber & Company, New York City
International Minerals & Chemical Corporation, Chicago, Ill.
Jackle, Frank R., New York City.
Southern States Phosphate Fertilizer Co., Savannah, Ga.
U. S. Phosphoric Products Division, Tennessee Corp., Tampa, Fla.
Virginia-Carolina Chemical Corp., Richmond, Va.

SUPERPHOSPHATE—Concentrated
Armour Fertilizer Works, Atlanta, Ga.
International Minerals & Chemical Corporation, Chicago, Ill.
U. S. Phosphoric Products Division, Tennessee Corp., Tampa, Fla.
Virginia-Carolina Chemical Corp., Richmond, Va.

TAGS
Keener Mfg. Co., Lancaster, Pa.

TANKAGE
American Agricultural Chemical Co., New York City
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
Davidson Commission Co., The, Chicago, Ill.
International Minerals & Chemical Corporation, Chicago, Ill.
Jackle, Frank R., New York City.
McIver & Son, Alex. M., Charleston, S. C.
Woodward & Dickerson, Inc., Philadelphia, Pa.

VALVES
Atlanta Utility Works, The, East Point, Ga.
Monarch Mfg. Works, Inc., Philadelphia, Pa.

Alphabetical List of Advertisers

American Agricultural Chemical Co., New York City..... 4
American Potash and Chemical Corp., New York City.....27
Arkansas Rice Growers Coop. Assn., Stuttgart, Ark. —
Armour Fertilizer Works, Atlanta, Ga.....14
Ashcraft-Wilkinson Co., Atlanta, Ga.....Front Cover
Atlanta Utility Works, The, East Point, Ga.....—
Baker & Bro., H. J., New York City.....—
Baughman Mfg. Co., Jerseyville, Ill.....—
Bemis Bro. Bag Co., St. Louis, Mo..... 17, 25
Bradley Pulverizer Co., Allentown, Pa.....—
Chase Bag Co., Chicago, Ill.....—
Chemical Construction Corp., New York City.....—
Commercial Solvents Corp., Agricultural Div., New York City.....2nd Cover
Davidson Commission Co., The, Chicago Ill.....34
Davison Chemical Corp., The, Baltimore, Md.....—
Fulton Bag & Cotton Mills, Atlanta, Ga.....29
Gascoyne & Co., Inc., Baltimore, Md.....34
Hammond Bag & Paper Co., Wellsburg, W. Va.....—
Hayward Company, The, New York City.....34
Hough Co., The Frank G., Libertyville, Ill.....—
Huber Co., L. W. New York City.....34
International Minerals & Chemical Corporation, Chicago, Ill.....Back Cover
International Paper Co., Bagpak Div., New York City.....19
Jaite Company, The Jaite, Ohio..... 20
Jackle, Frank R., New York City.....12
Keener Mfg. Co., Lancaster, Pa.....34
Keim, Samuel D., Philadelphia, Pa.....33
Kent Mill Co., Brooklyn, Ny.....26
Lion Oil Company, El Dorado, Ark..... 6
McIver & Son, Alex. M., Charleston, S. C.....24
Monsanto Chemical Co., St. Louis, Mo. 21
Monarch Mfg. Works, Inc., Philadelphia, Pa.....34
Potash Co. of America, New York City.....3rd Cover
Raymond Bag Co., Middletown, Ohio.....15
Sackett & Sons Co., The A. J., Baltimore, Md.....—
Schmutz Mfg. Co., Louisville, Ky..... 5
Shuey & Company, Inc., Savannah, Ga.....34
Southern Lead Burning Co. Atlanta, Ga.....—
Southern States Phosphate & Fertilizer Co., Savannah, Ga.....34
Spencer Chemical Co., Kansas City, Mo.....—
Stedman's Foundry and Machine Works, Aurora, Ind.....22
St. Regis Paper Co., New York City..... 3
Sturtevant Mill Co., Boston, Mass.....—
Texas Gulf Sulphur Co., New York City.....30
Titlestad Corporation, Nicolay, New York City.....—
Union Special Machine Co., Chicago, Ill.....—
U. S. Phosphoric Products Division, Tennessee Corp., Tampa, Fla.....18
United States Potash Co., New York City.....23
Virginia-Carolina Chemical Corp., Richmond, Va.....—
Wiley & Company, Inc., Baltimore, Md.....34
Woodward & Dickerson Inc., Philadephia, Pa.....16

FEEDING AND FERTILIZER MATERIALS

(SINCE 1898)

SAMUEL D. KEIM
1343 ARCH STREET
PHILADELPHIA 7, PA.

MONARCH SPRAYS

This is our Fig. 646 Nozzle. Used for Scrubbing Acid Phosphate Gases. Made for "full" or "hollow" cone in Brass and "Everdur." We also make "Non-Clog" Nozzles in Brass and Steel, and

Stoneware Chamber Sprays

now used by nearly all chamber spray sulphuric acid plants.

CATALOG 6-C

MONARCH MFG. WORKS, INC.
2501 East Ontario St., Philadelphia, Pa.

HAYWARD BUCKETS

Use this Hayward Class "K" Clam Shell for severe superphosphate digging and handling.

THE HAYWARD CO., 202 Fulton St., New York

GASCOYNE & CO., INC.
Established 1887
Chemists and Assayers
Public Weighers and Samplers
27 South Gay Street - BALTIMORE, MD.

SHUEY & COMPANY, Inc.

Specialty: Analysis of Fertilizer Materials and Phosphate Rock. Official Chemists for Florida Hard Rock Phosphate Export Association. Official Weigher and Sampler for the National Cottonseed Products Association at Savannah; also Official Chemists for National Cottonseed Products Association
115 E. BAYSTREET, SAVANNAH, GA.

KEENER MFG. CO., TAG MAKERS
438 Lancaster Ave., LANCASTER, PA.

WILEY & COMPANY, Inc.
Analytical and Consulting Chemists
BALTIMORE 2, MD.

SOUTHERN STATES PHOSPHATE and FERTILIZER COMPANY
SAVANNAH, GEORGIA
Manufacturers of
SULPHURIC ACID, SUPERPHOSPHATE, COMPLETE FERTILIZERS
and ALL TYPES OF BASE GOODS
EXPORT ORDERS SOLICITED

L. W. HUBER COMPANY
Brokers Fertilizer Materials
Room 903
170 BROADWAY
NEW YORK 7, N.Y.

THE DAVIDSON COMMISSION CO.
BROKERS

TALLOWS—GREASES—STEARINES
FERTILIZER AND ANIMAL FEED MATERIALS
VEGETABLE OILS—ANIMAL OILS
FATTY ACIDS—FISH OIL AND FISH MEAL
ANIMAL GLANDS AND GLANDULAR DERIVATIVES

UTILITIES BUILDING—327 SOUTH LA SALLE STREET
CHICAGO 4, ILL.

Telephone
WABASH 2604

Codes Used
ROBINSON
CROSS
KELLY-YOPP
TELETYPE CGO 1051

Quality and Service

You are assured on two important points — even in today's abnormal market — when you deal with P. C. A.

1. Quality . . . our Red Indian products are of unquestioned excellence.
2. Service . . . we make every effort to give you the service you want and deserve.

When better service is possible be assured P. C. A. will give it. Meanwhile your confidence, and your patience are greatly appreciated.

POTASH COMPANY OF AMERICA

CARLSBAD, NEW MEXICO

GENERAL SALES OFFICE . . 50 Broadway, New York, N. Y. • MIDWESTERN SALES OFFICE . . First National Bank Bldg., Peoria Ill.
SOUTHERN SALES OFFICE . . Candler Building, Atlanta, Ga.

PRIZE WINNERS

Crops Grown with Your Fertilizers Containing

INTERNATIONAL POTASH

You share in their pride of achievement when your farm customers win State Fair prizes for fruit and vegetables grown with your fertilizers.

Even more important to them, and to you, is the consistent production, year after year, of large yields of high quality, money-making crops . . . through the generous use of fertilizers.

The grade and uniformity and mechanical condition of raw materials are a big factor in your ability to deliver fertilizers that will produce dependably successful results for farmers. That is why so many leading fertilizer manufacturers use International Potash.

You will like the free-flowing characteristics of the clean, dry, granular crystals of International Potash. You'll find it easy to handle in car or storage, in mixing and in bagging. Its workability will save you time and money in manufacturing operations.

International Potash is mined and refined at Carlsbad, New Mexico and is prepared in the grades you require for the production of quality fertilizers.

SUL-PO-MAG (Water-Soluble Double Sulfate of Potash-Magnesia)
MURIATE OF POTASH • SULFATE OF POTASH

SUL-PO-MAG TRADE MARK REG. U. S. PAT. OFF.

POTASH DIVISION
International
MINERALS & CHEMICAL CORPORATION

GENERAL OFFICES: 20 NORTH WACKER DRIVE, CHICAGO 6, ILLIN

stomers
h your

nsistent
money-

of raw
ers that
That is
national

an, dry,
easy to
kability
s.
d, New
produc-

nesia)

LIN